BHARGOB DEKA

Data Scientist

(+1)438-871-6711
linkedin.com/in/bhargobdeka
Montreal, CA
bhargobdeka11@gmail.com
github.com/bhargobdeka
https://medium.com/@bhargobdeka11

SUMMARY

Data Scientist with 5+ years of experience, specializing in applied probability, statistics, Python, and developing data-driven algorithms for the hydropower company, Hydro-Québec. With a PhD in applied ML, I have a strong track record of developing innovative approaches for analyzing large data systems and providing informed decision-making. A data science volunteer, a peer reviewer for Medical Decision Making, as well as a Medium blog writer for topics in Generative AI.

ACHIEVEMENTS

Technical Leadership

Led the development of uncertainty quantification in Bayesian neural networks. Created the open-source packages AGVI and TAGI-V, boosting training efficiency by 100x.

Collaborative Leadership

Proficient in cross-functional collaboration, mentoring students, and adept at presenting machine learning solutions within engineering contexts.

SKILLS

Programming Languages and Frameworks

Python | SQL | MATLAB | C++ | TensorFlow | Keras | Scikit-Learn | Pandas | Spark | Looker

Production-Ready Tools

Docker | FastAPI | TF-Serving | Kubeflow | AWS Sagemaker | MLFlow | Vertex AI | BigQuery

EXPERIENCE

Machine Learning Researcher

Polytechnique Montréal (Partner: Hydro-Québec)

01/2023 - 06/2024 Montreal, CA

- Introduced a pioneering model for quantifying heteroscedastic uncertainty in large-scale regression and time series tasks.
- Optimized Bayesian neural networks, reducing training time by 100x while significantly reducing computational resource usage.
- Combined the approach with an LSTM model to enable large-scale time series analysis for more than 400 sensors.
- Developed benchmarking tests for the cuTAGI library using a Python wrapper and C++ backend.

Graduate Researcher

Polytechnique Montréal (Partner: Hydro-Québec)

09/2018 - 12/2022 Montreal, CA

- Developed pioneering machine learning solutions for two critical dams in Quebec, while handling complex data systems.
- Created an early anomaly detection system that decreases false alarms by 50%.
- Minimized training time for the predictive maintenance framework of bridges in Québec from 33 to 0.3 hours.
- Deployed the model in production allowing for batch inference by Hydro-Quebec's team.

EDUCATION

PhD in Civil Engineering (Applied Machine Learning)

Polytechnique Montréal

09/2018 - 12/2022

GPA **4.0** / 4.30

M.Eng. in Civil Engineering

McGill University

09/2015 - 03/2018

GPA **3.88** / 4.0

ADDITIONAL EXPERIENCE

Data Science Volunteer

Data For Good, Montreal Chapter

01/2023 - 12/2023 Montreal, CA

- Gathered and analyzed data from Literary Quebec to enhance their productivity by deriving quantitative insights from their data.

Teaching Assistant

McGill University

09/2016 - 04/2017 Montreal. CA

- Conducted tutorial sessions for two subjects: *Probabilistic Systems* and *Civil Engineering System Analysis* for a class of 120 undergraduate students from Civil and Mining Engineering Department. Created and evaluated weekly assignments.

Design Engineer

NORSAR

06/2014 - 07/2015 Guwahati, IND

- Conducted seismic vulnerability analysis on 50+ buildings, improving the safety of the seismic city of Guwahati, India.
- Collaborated with NORSAR's earthquake engineers to gather data for diverse building typologies, developed 2D and 3D nonlinear models for buildings, and conducted pushover analysis to determine vulnerabilities.

OPEN-SOURCE PROJECTS

RAG Code Assistant for Speckle

https://github.com/bhargobdeka/RAG-chatbot-Speckly

Developed an advanced RAG code assistant to ask questions on the Speckle's developer docs. It is capable of retrieving relevant documents, grading them, generating response, and checking for hallucinations.

Houseplant Health Check Model

github.com/bhargobdeka/houseplant-healthy

Developed and deployed a CNN model to differentiate healthy from wilted houseplant images. Used React Native for the UI, TensorFlow Serving for version control, and deployed on Google Cloud Platform (GCP).

Permit Time Approval Model for Real Estate

github.com/bhargobdeka/Real-estate-ML

Built an end-to-end ML model for predicting permit approval times in Montreal, QC. Utilized diverse data sources, performed EDA, and deployed with Docker, FastAPI, and Locust.

PUBLICATIONS

Analytically Tractable Heteroscedastic Uncertainty Quantification in Bayesian Neural Networks for Regression Tasks.

Neurocomputing

Deka, B., Ha Nguyen, L., Goulet, J. A.

2023

Approximate Gaussian Variance Inference for State-Space Models.

International Journal of Adaptive Control and Signal Processing

Deka, B. and Goulet, J. A.

2023

The Gaussian Multiplicative Approximation for State-Space Models.

Structural Control and Health Monitoring

Deka, B., Ha Nguyen, L., Amiri, S and Goulet, J-A.

2022

CERTIFICATION

Python and Pandas for Data Engineering
Duke University

Generative AI for Large Language Models
DeepLearning.ai

Machine Learning with PySpark
Coursera

Data Management with Databricks
Cousera